REMARKS

Reconsideration and allowance of the above identified application is respectfully requested in light of the following arguments and remarks. In this regard, it is submitted that such reconsideration is appropriate, even though the rejections presented in the latest Official Action have been made final, since the principal reference applied in the latest Official Action, namely the prior patent to Reid, was first cited and applied in the latest Official Action. It is believed that the applicant should have an opportunity to respond.

The Claim Objections

In the latest Official Action, the Examiner objected to Claim 1, and the rejection has been corrected in the manner suggested by the Examiner.

The Section 102 Rejections

The Examiner rejected Claims 1-4 as being anticipated by the newly cited prior U.S. patent to Reid.

To briefly summarize, the invention as recited in base Claim 1 relates to a method for linearizing a nonlinear curve, wherein the curve represents the relationship between input signals and output signals of a sensor and wherein an output signal is respectively associated to each input signal. The linearization is performed by using an analog linearization circuit with digitally adjusted parameters, i.e. the analog linearization circuit can be adjusted by digitally adjustable components.

The signal which is input to the linearization circuit is linearized by analog components and is not digitized while passing the linearization circuit, i.e., the linearization is performed by using analog components (1, 10, 11, 12, 13 and 14). Each additional block which is shown in Fig. 1, including the sequence controller, is used to perform the step of adjusting the analog linearization circuit in an essentially automated way.

In adjusting the analog linearization circuit, three sensor signals which are output by the sensor at three different measuring points are digitized. These values are stored by the sequence controller and one after the other is output to the linearization circuit. The output of the linearization circuit is compared to corresponding reference values which are given by three sources of reference signals. Alternatively other devices like keyboards might be used. Successively, the single digitally adjustable parameters of the analog linearization circuit are changed until the output of the linearization circuit and the corresponding reference value are within certain limits.

The cited patent to Reid discloses a method for calibrating and linearization the output of an instrument that includes a transducer having an output that is a nonlinear function of a property of interest of a fluid. More particularly, Reid relates to a gas sensor, commonly called a Luft detector, which measures the concentration (or partial pressure) of one gas in another by measuring the quantity of infrared radiation that is absorbed by the gas of interest as it flows through the sample cell that is illuminated by the infrared source of known intensity. There are different valves which are used to direct one of a zero gas (with none of the gas of interest), a standard gas (with a known non-zero concentration of the gas of interest) and an unknown sample gas (with an unknown concentration of the gas of interest) to the sample cell. These valves are controlled by a valve driver which is linked to a CPU. The infrared light is received by an infrared transducer and its signal is converted to a digital number which is used by the CPU for linearizing the output. The linearization is performed by the CPU using digital calculation, i.e. by calculating an inverse of the transfer function of the transducer.

Thus Reid teaches a method for linearizing a nonlinear curve (calculating inverse of the transfer function) comprising the step of adjusting the linearization circuit in an essentially automated way (measuring the output of the sensor while using the zero gas and while using the standard gas) by means of a sequence controller (computer). However, Reid does not teach a method for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller. Reid just relates to linearization using digital calculations.

It is recognized that Reid mentions analog linearization circuits while presenting the state of the art, but the usage of an analog circuit for performing a linearization of a signal in the manner as presently claimed is not taught. As there is an obvious tendency, that one of ordinary skill in the art is trying to avoid analog circuits and is replacing them by microcomputers wherever possible, Reid does not teach the usage of an analog linearization circuit.

Reid also does not teach an analog linearization circuit with digitally adjustable parameters. Possibly, the Examiner relates to the digitally adjustable valves as digitally adjustable parameters. But these are used to control the gas flow to the sample cell. They are not used to adjust the analog linearization circuit.

The Section 103 Rejections

Claims 5-8, 12-32, 34-37 and 39-41 were rejected as being obvious over a proposed combination of Reid and Kondraske, and

Claims 9-11, 33, and 38 were rejected as being obvious over Reid and Kondraske and various other secondary references.

The secondary references applied in these rejections do not supply the deficiencies of Reid as noted above, and it is accordingly submitted that the § 103 rejections are untenable and should be withdrawn.

In addition, it is submitted that the combination of Yunus, Kondraske and Reid plus using the knowledge of one of ordinary skill in the art is an impermissible hindsight view of the current invention. Yunus shows the linearization with an analog linearization circuit. Kondraske teaches to compare the signal of a sensor with the signal of a reference transducer wherein both sensors measure the same physical variable. Reid teaches a calibration of a linearization circuit in an essentially automated way by means of a sequence controller. When additionally using the knowledge of one of ordinary skill of the art and knowing the current invention, it might be obvious to perform the method of the current invention as claimed. But it is not obvious, which facts should guide one of ordinary skill in the art to perform the linearization and the adjustment of the analog linearization circuit in the claimed manner.

In summary, it is submitted that Reid and the other cited documents do not teach the method for linearization nonlinear curves as claimed. It is accordingly submitted that the rejections should be withdrawn and the application passed to issue at an early date. Such action is solicited.

Respectfully submitted,

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Date